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Community-based organisations as an approach to effective sustainable artisan fishing

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COMMUNITY-BASED ORGANISATIONS AS AN APPROACH TO EFFECTIVE SUSTAINABLE ARTISANAL FISHERIES

"The Coastline of South West Region of Cameroon"

By

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Cameroon

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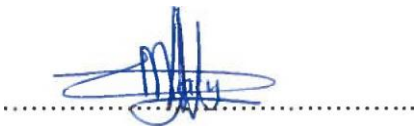
DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.
The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University

(Signature): 

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ABSTRACT

Title of Dissertation: **Community-Based Organizations as an Effective Approach to Sustainable Artisanal Fisheries**

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Fishing in Cameroon is one of the main economic activities and lifeline of the coastal communities in the South West Region of Cameroon, especially the artisanal fishing which is mostly traditional and subsistence. Cameroon fisheries are either fully exploited or are already in the critical state of over-exploitation by foreigners and local communities. However, illegal fishing and aggressive fishing practices in the marine environment has led to over exploitation of the fisheries, mangroves and environmental deterioration. There is an urgent need to develop and introduce effective and efficient sustainable approaches, to the exploitation and management of Cameroon's fisheries and other environmental resources before they are completely depleted.

Lack of scientific data and cooperation from the rural community-based organizations increases uncertainty and prevents the adequate monitoring of marine resources. This research focuses on the rural community-based organizations as an effective approach, of integration to local fishing communities into decision-making processes, with the aim to promote sustainable artisanal fisheries and support capacity building amongst stakeholders in the coastal areas of SWR Cameroon. Because the artisanal fishers are resource poor, small-scale fishers, with little knowledge and skills, using elementary technology and traditional methods for fishing, there is an urgent need for an effective and efficient sustainable approach, and a need to elaborate collective proposals with policy implications to ensure sustainable fisheries.

Overall, these rural communities-based organizations will be a forum or platform for these small-scale, resource poor, low skilled and knowledge deficit communities' members to pool their resources together for the purpose of pursuing their common economic goals. They also support and inspire the use of the most suitable fishing skills, equipment and methods in their campaigns and programs aimed at promoting sustainable fishing, especially for artisanal fishing as a means to alleviate poverty and achieve rural development.

KEYWORDS: Effectiveness, Rural Community-based Organizations, Sustainability, Capacity Building, Fisheries Policy Enhancements.

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LIST OF ACRONYMS

AF	Artisanal Fishermen
ABB	Area Boys Batoke
AFG	Awasha Fishing Group
AMMCO	Africa Marine Mammal Conservation Organization
ADB	Africa Development Bank
BW	Bamuso Women Social Group
BOD	Board of Directors
CDC	Cameroon Development Cooperation
CECAF	Fishery Committee for the Eastern Central Africa
C/BROs	Community-Based Rural Organization
CFA	Cameroonians Fisheries Association
CIG	Common Initiative Group
DDFG	Debuncha's Drivers Fisheries Group
EEZ	Exclusive Economic Zone
EIG	Economic Interest Group
FAO	Food and Agriculture Organization
FTU	Fishers Trade Union
GA	General Assembly
GDP	Gross Domestic Product
GFA	Ghanaians Fishermen Association
GM	General Meeting
IDAF	Integrated Development of Artisanal Fisheries
ILO	International Labor Organization
IRAD	Institute of Agricultural Research for Development
IUU	Illegal Unregulated and Reported Fishing
LIFAN	Limbe Fisheries Association Network
LOS	Law of the Sea Convention
MFG	Mosobo Fisheries Group
MINEP	Ministry of Environment and Nature Protection

MINEPIA	Ministry of Livestock, Fisheries and Animal Husbandry
MINDEPECAM	Artisanal Maritime Fisheries Development Agency
M&E	Monitoring and Evaluation
MSC	Monitoring Control and Surveillance
NEPAD	New Partnership for Africa's Development
NGOs	Non-Governmental Organizations
NFA	Nigerian Fishermen Association
OLIFO	Ocean of Life Foundation
SAF	Sustainable Artisanal Fisheries
SC	Supervisory Committee
SDGs	Sustainable Development Goals
SOWEDA	South West Development Authority
SRHOL	Research Station for Fisheries and Oceanography
SWR	South West Region
TFA	Tiko Fishermen Association
TURF	Territoriality Use Rights in Fisheries
UN	United Nations
UNEP	United Nations Environmental Porgramme
UNCLOS	United Nations Convention on the Law of the Sea
USAID	United States Agency for International Development
WB	World Bank
WCFAN	West Coast Fisheries Association Network
WWF	World Wildlife Fund

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CHAPTER I

1.1 Background Information

Fishing along the coastal area of the south west region of Cameroon like anywhere along the coastline of the country, is one of, if not the most important occupation of the rural population. It is mainly artisanal fishing which is mostly traditional and subsistence. The fishers are small-scale, with low or elementary technology and, lack of knowledge and good fishing skills. Most of the time, they are people who lack employment elsewhere from within the country and/or immigrants from other countries, such as – Nigeria, Togo, Benin and Ghana, who seem to have little interest in the sustainable exploitation of the economic resources of the host area. It has been estimated that 4.3 billion people of the world depend on fisheries resources for protein (FAO, 2016). Global food security and over 30% of the world's animal protein, have been affected and are, - rapidly declining due to overfishing and ecosystem degradation caused by destructive fishing methods and practices (Quaas et el., 2016). Climate changes and overharvesting of environmental resources are some of the related causes to these facts, namely; fishing over capacity, the collapse of fish stock caused by the degradation of aquatic ecosystems and a deficient fisheries management (Koolman .M 2005). With the rapidly growing population of these coastline areas, the problem of fisheries sustainability according to the UN SDGs 1 and 2 to fight against hunger and livelihood has become critical and to the forefront of globalization (FAO 2015).

In the early 1990s the Government of Cameroon, assisted by some international donor organizations, established legislation aimed at facilitating the organization and reorganization of communities, especially rural communities, into economic activities promotion groups. The main objectives of these community-based organizations were to enable their members to pool together their resources for the promotion of common economic activities. With the favorable policy environment, communities along the coastal area of the South West Region of Cameroon, like any other place in the country, formed community-based organizations for the promotion of their common interest economic activity, that is, artisanal fishing. These organizations have been supported

over the years by the Government of Cameroon and international donor organizations such as the ADB, WWF, UNEP and USAID through developmental projects like the Livestock, Mangrove Forest Protection, Wildlife and Fisheries Development Project for the South West Region of Cameroon.

This study both observed and examined the role and effects of these community-based organizations as an approach to sustainable utilization of the fisheries resources by artisanal fishers of the coastline of the South West Region of Cameroon.

1.2 Problem Statement

It is generally known that the unsustainable exploitation of fisheries resources along the coastal areas of SWR of Cameroon, is a serious threat to the livelihood of its communities, especially the artisanal fishers who depend almost entirely on fishing to provide for their families. These artisanal fishers are resource poor, small-scale fishers, with little knowledge and skills, using elementary technology and traditional methods for fishing.

It is a well-established fact that the marine fisheries resources of Cameroon are either fully exploited or are already in the critical state of overexploitation by foreigners mostly from Nigeria, Benin, Ghana, China, Korea and Cameroonians with the different habits of practice. For instance, (FAO/CECAF Working Group Cameroon Report, 2008), demonstrated that Croaker (Pseudotolithus species) one of the main fisheries products (fish species) of the SWR and Cameroon artisanal fishers as a whole, is already in a state of over-exploitation. The status of shrimp according to FAO (2001), shows that the trends in catches of shrimps (another major product of the country's artisanal fisheries) has decreased significantly from 942 tons in 1970 to 236 in 2010. That is a 75% decrease. This clearly depicts or indicates a critical state of over exploitation. In another study, Djama (1988), found that eight demersal species have been in an exploitation rates of 0.5 whereby the author concluded that the species Sardinella and Ethmalosa are exploited mainly by the artisanal fishers who are in a comparatively better state of full exploitation. The fact that there are many studies showing the over-exploitation, or at best the full exploitation of the Cameroon fisheries sector, particularly the artisanal sub-sector, indicates an urgent need of an effective and efficient sustainable approach to the

exploitation and management of the country's fisheries resources and the need for capacity building amongst the stakeholders.

In the early 1990s, the Government of Cameroon, with the assistance of some international donor organizations such as UNEP, USAID, WWF, WB and FAO, put in place policies aimed at facilitating the organization and reorganization of communities, especially rural communities, into groups or rural community organizations. The main objective of these community-based organizations was to provide a forum or platform for these small-scale, resource poor, low skilled and knowledge deficit communities members to pool their resources together for the purpose of pursuing their common economic goals, (FAO 2017) and also to support and inspire the use of the most suitable fishing skills, equipment and methods.

With significant support from the Government of Cameroon and some international donor organizations to this sector, this study will examine the role of these communities/rural organizations as an effective approach (criterial for effectiveness which the author developed, see section 3.3). The study examines critical the problem of unsustainable exploitation of the fisheries resources of the coastal areas SWR of Cameroon, on which its communities depend on for their livelihood. The study will also examine the impact of these organizations on the artisanal fishers and their communities.

Finally, the study will examine the strengths and weaknesses of these approaches to sustainable artisanal fisheries and recommendations for possible areas for improvement. Policy implications will then be derived based on the findings of the studies.

1.3 Objectives of the Study

The main objective of the study was to assess the community-based organizations as an effective approach to Sustainable Artisanal Fisheries (SAF) in the coastal areas of the South West Region of Cameroon.

1.3.1 Specific objectives:

The specific objectives of the study were to:

- Determine the main constraints to SAF in the coastal area of the South West Region of Cameroon,
- Find out how these communities are organized to better support SAF by

eliminating or mitigating constraints to SAF,

- Ascertain the strengths and weaknesses of community-based organization as an approach to SAF,
- Determine the impact of the community-based rural organizational approach on SAF and poverty alleviation.

1.4 The following research questions are answered by the study:

- What are the major constraint to SAF in the coastal area of the South West Region of Cameroon?
- How are these communities/rural-based organizations organized for the purpose of promoting SAF and eliminating or mitigating the main constraints to SAF?
- What are the strengths and weaknesses of the community/rural organizational approach to SAF in the coastal area of the South West Region of Cameroon?
- What are the effects/impacts of the community/rural organizational approach on SAF?

1.5. Objective Criteria defining Effectiveness of CBROs as an SAF

With the assistance of staff of the Divisional Delegation of the Ministry of Livestock and Animal Industry, and the Research Station for Fisheries and Oceanography (SRHOL) Center in Batoke-Limbe, a set of objective criteria was defined to determine if a community-based organization (CB/O) is an effective approach to assist artisanal fishermen to adopt/practice SAF methods/techniques. These objective criteria were defined at two levels: the level of the C/RO itself and at the level of the artisanal fisherman.

1.5.1. Effective Criteria at the level of the C/R O:

- Training/education of members on SAF and management: Whether at the level of the C/RO, training or education of its members on SAF is defined in its program as one of, or a main objective or activity according to the UN SDGs 1, 2, 4, 11 and 14. This was easily determined from the interviews and confirmed by consulting the documentation of the C/RO such as training programs or activity reports.
- Whether the C/RO actually trained its members on the SAF and its importance

was examined. Two to three training sessions per given period were established from the interviews and confirmed by consulting documentation of the C/RO such as training programs or activities reports.

- SAF Training Monitoring and Evaluation System. For the C/RO to be considered as an effective approach in training/educating its members on SAF, it must have put in place an M&E system (with good monitoring and evaluating indicators or parameters), to monitor and evaluate the implementation and practicing of the SAF. Lessons learned by its members and the identification of shortcomings and areas of difficulties faced by the members in the implementation phase was undertaken, so that ways, to overcome these shortcomings or difficulties were proposed and then incorporated into subsequent training.

1.5.2 At the Level of the Artisanal Fisherman:

- Whether the artisanal fishers actually attended the SAF trainings sessions was carried out by the C/RO.
- If the artisanal fishers know or can identify the unsustainable fishing activities or practices, they have to stop practicing the use of chemicals to catch fish and stop the use of plastic to dry and smoke fish (Ntaryike D, 2013, & Ahmed et al., 2011),. They have to start or continue practicing sustainable fishing practices in order to render their fishing activities (which in most cases is the only livelihood of their entire family) sustainable for the long term.

1.6 Significance and Implications of the study

In the context of West African Integrated Development of Artisanal Fisheries (IDAF region), marine fisheries are characterized by the co-existence of small-scale (artisanal) fisheries with large scale industrial fisheries (Djama,1992). Both fisheries tend to interact in a biological sense but also economically and physically.

Fishing along the coastal area of the South West Region of Cameroon, like anywhere along the coast line of the country, is one of, if not the most important occupation of the rural population. For instance, in Fako around Tiko, West Coast; Idenau, Njonji, Isobe, Debuncha and Batoke, Ndian Division, especially in the creak areas such as Idabato, Bakassi, Bamuso, Isangele, Kombo, Bekumu and Njangassa, artisanal

fishing which is mostly traditional and subsistence, is the main economic activity and lifeline of the inhabitants. However, as stated in section 1.2 (Problem Statement), it is a well-established fact that the marine fisheries resources of Cameroon, especially the artisanal fishery sub-sector, are either fully exploited or are already in the critical state of overexploitation. Therefore, there is an urgent need to identify and introduce effective and efficient sustainable approaches to the exploitation and management of the country's fisheries resources before they are completely depleted.

It is also hoped that this study will be utilized by the Government of Cameroon and its partner international donor organizations interested in the fisheries, especially the artisanal fisheries sector in SWR of Cameroon, in their campaigns, programs and projects aimed at promoting sustainable fishing, especially artisanal fishing, as a means to alleviate poverty and achieve rural development. Based on the findings of the study, policy implications can be derived and beneficial to the SWR and all of Cameroon. Furthermore, it would assist in attaining the UN SDGs 1, 2, 4, 11 and 14 targets, which are tailored toward sustainable fishing activities. It is also hoped, it will be used by the concerned communities and the fishers who are the primary beneficiaries of this economic activity. The study will also serve as a good basis for further studies or research on related areas since there is very little, if any at all, studies and documented research on this sector in the SWR of Cameroon. It will also be useful for those in or willing to go into the fisheries industries in Cameroon and beyond.

CHAPTER II

2.1 Literature Review

On this chapter the author defines different terminology of community-based artisanal coastal fisheries and how they can support future sustainability of Cameroon's fisheries.

2.1.1 Terminology

2.1.2 Artisanal Fisheries

Artisanal sustainable fisheries comprising fishing families, (by means of relatively small sums of money and liveliness), utilize comparatively small fishing vessels that operate sparingly near to the seashore, chiefly for local food consumption. In reality, the classification of different vessels varies amongst countries. Artisanal sustainable fisheries are a form of gathering, or a one-man canoe for fishing in an underprivileged evolving country (FAO, 1987), with the use of trawlers, purse seiners, or long-liners in developed country. Artisanal fisheries can be subsistence or commercial fisheries, providing for local consumption or export. They are sometimes referred to as small-scale fisheries.

2.1.3 Community

From the Business Dictionary a community is defined as a self-organized network of people with common agenda, cause, or interest, who collaborate by sharing ideas, information, and other resources. Virtual communities consist of participants in online discussions on topics of mutual concern and also, clusters of common interests that arise from associations. According to the Cambridge dictionary, a community is a group of people living in the same place or having particular characteristics in common. In addition, a community-based organization can be formal or informal groups of people based in or around a "community" and are organized in some way, usually having some structure, rules or legal entity but sometimes being just an informal association.

2.1.4 Poverty Alleviation

The fisheries stocks in Cameroon have declined from 2014 levels by 2.7% due to overfishing, and ecosystem degradation caused by destructive fishing methods and

practices. From the result of global food security, 30% of the world animal protein has been affected such as access to food, shelter, health and sanitation (Quaas et al, 2016). To contain an absence of simple human rights, and finally to reveal other qualitative understandings that capture peoples' own practices and definitions, with physical aspects such as feelings of powerlessness, humiliation and insecurity (Bene, 2006).

2.1.5 Community-Based Organization Livelihood of Artisanal Fishers

According to the Chamber Dictionary, a livelihood is defined as an adequate stocks and flows of food and cash to meet basic needs. These basic needs include, water, shelter, food, medicine and clothing. According to the English Oxford Dictionary, livelihood is a set of activities, involving securing, water, food, medicine, clothing, shelter and the capacity to acquire the above necessities working either individually, or as a group by using both human and material for meeting the requirements of the individual and his/her family on a sustainable basis in a dignified manner (Allison & Horemans 2006).

Most communities living in the coastal areas depend on fisheries as a source of employment and food security for protein. However, small scale fisheries activities are mostly disrupted by industrial fishing vessels, mainly on the occupation of the traditional fishing grounds. Due to physical conflict between artisanal and semi-industrial fisheries, the issue of territory fishing rights is raised, Territoriality Use Rights in Fisheries (TURFs) (Furubotn & Pejovich, 1974; Scott & Johnson, 1985) is a lengthy and expanding issue in resource economics, which can either be resource income lost under open access to be captured, or C/BRO control over these use rights and incomes that is generated, as a means by which the fishing communities can be improved institutionally (Christy, 1982). This has reduced the activities and catches of the artisanal fishermen, destroyed their nets, and resulted in disputes and conflicts that have led to injury and death (Roush et al., 2014)

2.2 Artisanal Fisheries and Poverty Alleviation

It is important to explain the affiliation between artisanal fisheries and poverty alleviation by appreciating what is poverty in fishing-dependent communities and outlining the present strategy about the small-scale fisheries show in the establishment

of security nets and the contributions that they can make to pro-poor growth (Béné, Hersoug & Allison 2010). In expressions of its socioeconomic importance, artisanal fishing activities offer food and income to millions of people worldwide. This projected that roughly 35 million fishers around the world hold (90% of the total) which can be classified as artisanal fishers, while over a 100 million people are engaged artisanal fisheries' reliant on this sector (Béné, Macfadyen, & Allison 2007).

Why is there an emphasis on sustainable artisanal fisheries? The normal level of healthiness (e.g., productiveness, youth mortality, adult mortality) of artisanal fishing communities, in many developing countries is no better than correspondent pastoral societies (Tietze et al., 2002). In the case of women, the level of healthiness may even be worse. Fishing also has solid social relations in many temperate coastal communities and is commonly a significant part of traditional individuality than a decision of “last resort” for the coastal poor, where resolutions about when and where to fish and what species to fish are inclined by a difficult interaction of socioeconomic, cultural, and historical influences (Béné and Tewfik, 2001).

The community-based approach continues to encourage the association, capacity development and enablement of fishers and communities-based rural organization, eventually engaging themselves in a more vested situation to smooth benefit-sharing marketing engagements with viable companies, as well to work with governmental and other agencies towards the progressive realization of a sustainable and environmentally friendly manner (Pomeroy, R. S., & Berkes, F.1997).

2.2.1 Community-Based Approach

A community-based organization as an approach of fisheries management is a system, or method that is used to monitor artisanal fisheries by the government, local authority, non-governmental organizations and interested stakeholders for a sustainable fisheries management (Needham et al., 2013). This approach is a cooperative management consensus where the government and the C/BRO aim to achieve a common goal (Bulayi, 2001). This approach was applied to improve fisheries capacity in six countries by the FAO Regional Fisheries Livelihood Program in Vietnam, Sri Lanka, Timor, South and Southeast Asian (Needham et al., 2013). This approach is the best

alternative because it allows the artisanal fishers to have a clear understanding of the impact of their activity on the marine environment and its immediate consequences to the ecosystem.

2.2.2. Community Association by the Management and International Donor organization as a means of poverty alleviation

The national policy-makers and international development agencies are fully aware of the nexus that exists between the policies promoting economic rent maximization and economic growth as a solution for poverty reduction, and the current welfare function fulfilled by small-scale fisheries in developing countries like Cameroon. At the same time, force from supporters and improvement organizations, sent by civil society and international NGOs, led to the assumption of a growing quantity of fisheries decentralization changes, including participatory, community-based and/or co-management projects (Berkes, 1995; Béné & Neiland, 2006).

2.2.3. General Situation of Fishing in Cameroon,

Cameroon's coastal zone is approximately 402km long on the Atlantic Ocean, bordered from Nigeria by River Akwayafe, to the South Camp River bordered by Equatorial Guinea (Suh Louis, 2015). The total space of water equals 2,730sq km. The continental shelf is estimated at 15,400km2 and descends through 30, 50 and 100m depth. The dense coastal rivers are surrounded by underground water and, the rainfall is ordinary heavy on the coast with an average of 3,000 – 4,000mm with the peak of 10,160mm yearly at Debunscha around mount Cameroon (Ayassi et al., 2014). The coastal area is the most populated zone with a growth rate of 2.59% (World Bank 2017). Cameroon has a population of 24,994,885 inhabitants (CIA, 2018). Cameroon's EEZ extends 200 nautical miles extending offshore. The country is often referred to as Africa in miniature because of the rich ecological and cultural diversity.

Geographical Map of Cameroon

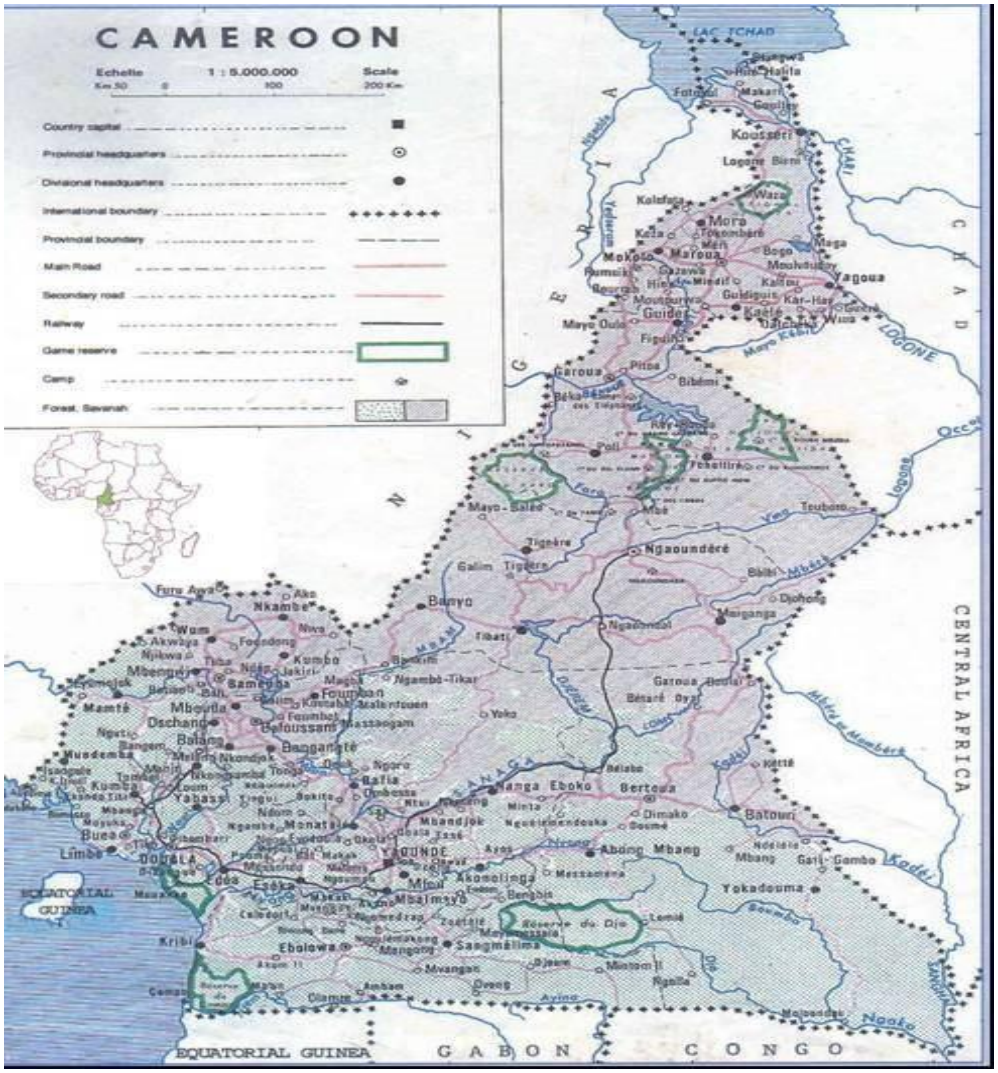


Figure 1: Map of Cameroon, (Source: Folack 2007)

Fisheries management in maritime waters is routinely divided into two sectors: the semi-industrial and artisanal fisheries while the fisheries sector is divided into semi-industrial, artisanal and shrimp fisheries (Folack 2009). For the small scale artisanal fisheries in Cameroon, they operate within the 2 nautical mile limit that is banned to industrial vessels. The industrial vessels are mostly dominated by foreign vessels (85% of the vessels) which are from Nigeria, Ghana, Benin and Togo (Djama, 1992 & MINEPIA Framework Survey 2009). Furthermore, the artisanal fisheries sector of Cameroon

provides more than 85% of the total fish production catch (100,000mts) per year. The major tribes that are mostly involved in artisanal fishing in Cameroon are Bakwerians, Douala, Babimbi, Batanga and Yassa and they are very individualistic in their actions (Djama 1992). The Food and Agricultural Organization of the United Nations (FAO) profiled Cameroon in their 2007 report. The report identified that Cameroon communities largely depend on fisheries for food security and protein. Total capture production for 2015 was estimated at 239,000mts, with 75,000mts from inland waters and 164,000mts from marine waters and, about 67% of the total marine catch accounts from small pelagic of the total marine catch (Folack 2009). The total number of marine catch supplied by artisanal fishers in the whole of Cameroon's coast is estimated to be taken by 18,400 fishers (FAO, 2007), particularly in the estuaries where they use traditional fishing gears such as bottom set and drift nets, encircling nets, hand lines and traps.

In the early 1970's foreign fishers from Ghana and Benin established themselves, and introduced their own fishing habits with a new method of pelagic purse seining that was introduced in the fishing grounds of Cameroon (Djama 1992). In 2015, the artisanal sector directly employed 2,500 people in offshore fisheries with over 50 trawlers, which were more than 24meters in length were identified in 2009 (Djama 1992). The total number of vessels reported during 2009 was 12,700 vessels. The fishing grounds in Cameroon are highly competitive between artisanal fleets and the semi-industrial fleets, which often results in conflicts over the marine resources (FAO 2001). There are several inland water resources in Cameroon with several large rivers and the main ones are the Sanaga and Benue rivers. By the end of 2015, the inland fisheries involved more than 31,000 workers employed, comprising fish mongers, fishermen and dried/smoked men and women (FAO 2007).

2.3 Importance of Fisheries in Cameroon Economy

The fishery sector plays an important role in the lives of the individual as it is the main source of protein to the community, with an average fish consumption estimated at 15.4kg per person in 2013 (FAO, 2007). The fisheries sector alone contributed 2.9% to the national income in 2015, and fisheries production is estimated at 212,000mts representing 15.2% of the overall GDP (Cameroon Report, 2017). Due to the over

exploitation of marine fisheries resources, population pressure has become a problem with a growth rate of 2.59% annually (World Bank, 2017). Cameroon produces many fish species, both from artisanal fishing and semi-industrial operators such as, mackerel, barrel, shrimps, catfish and pelagic fish. However, Cameroon's marine environment needs immediate attention especially the fishery resources which are under serious threats due to weak policy and regulations, poor governance, lack of regional cooperation and overfishing, weak implementation and enforcement schemes and dominance of fishing trawlers (Ayassi et al, 2014). This has led to the rapid decline of fish stocks as compared to past years (Cameroon Report, 2017). A data collection system for artisanal marine fisheries sector was established in Cameroon in 1982, in relation to catches, record of statistics and effort to renovate the sector (Njifonjou et al., 1999). The main sources of uncertainty are derived from a lack of knowledge of sustainable fisheries

2.3.1 Cameroon Artisanal Fisheries Sectors

Figure 2: Traditional Wooden Canoes in Limbe-Dockyard

Fishing Boats at Dockyard (Photos by Wabit 2018)

The artisanal sector of Cameroon fisheries has undergone significant evolution over the years. In the seventies, a total of about 18,615 fishers were identified, operating 6,011 canoes for a production of around 55,000mts (Njock, 1987). This number has increased over the years as a result of fishers seeking refuge in Cameroon territory from the Bakassi war that escalated in the 1990's and today there are about 24,000 fishers for a production of above 62,876 tonnes (MINEPIA Frame survey, 2009).

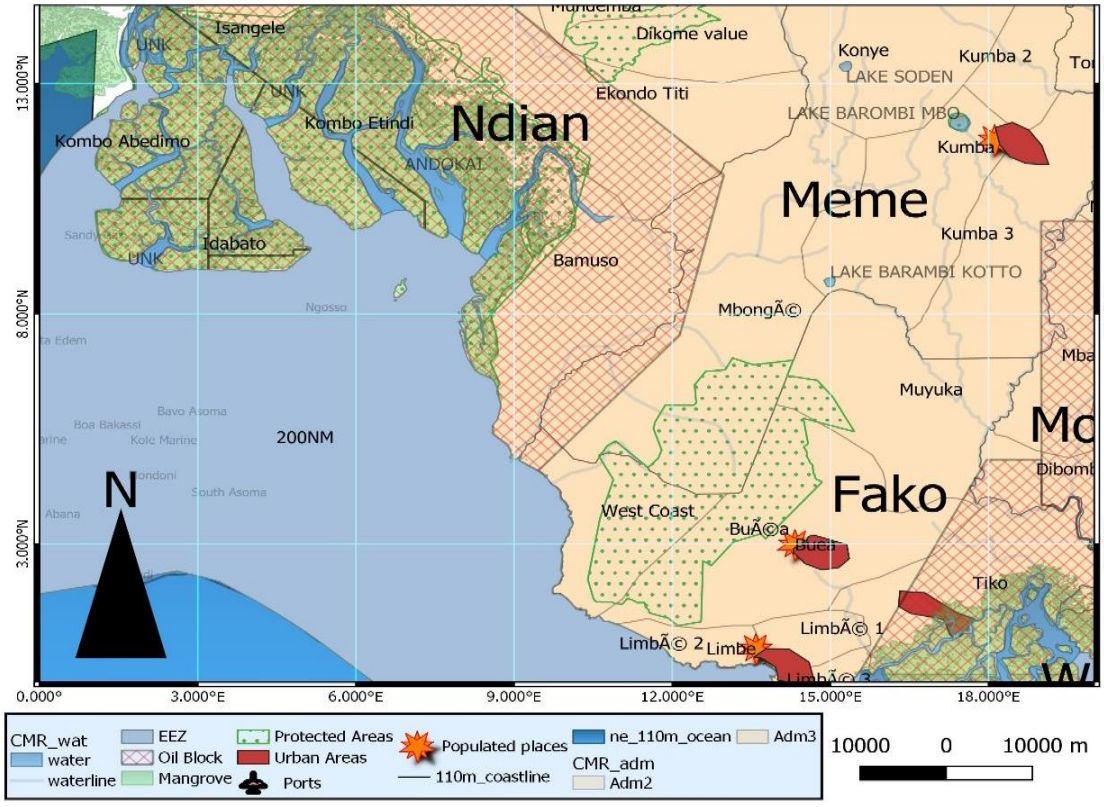
CHAPTER III

3. Research Methodology

3.1 Study Area

The south west region of Cameroon has a coastline area of 402km2, located in the Gulf of Guinea, bounded to the West by Nigeria and to the east by the littoral region of Cameroon. It is located between latitudes 4 and 6:30 north and between longitudes 8:30 and 10:00 east in the Gulf of Guinea. The coastal area of the south west region of Cameroon stretches through two local government administrative divisions; Fako and Ndian Divisions. The coastal division is further divided into 6 Government administrative units call sub-divisions: Tiko, Limbe, Edinou, Bekora, Ekondo Titi, and Isangele sub-divisions which is headed by a divisional office and sub-divisional officers govern each sub-division respectively.

Figure 2: Map of the Coastal Areas of South West Region - Cameroon



(Map Produced by M. Wabit August 2018)

3.2.1 Data collections

Even though data collection for this study was programmed to last for three weeks, only one and a half weeks was effectively achieved for the data collection phase of this study; due to the civil war situation in Cameroon. It was also impossible to administer the questionnaires that were developed for this purpose.

For the data collection phase of the study:

- The primary data was collected through a set of structured face-to-face interviews with individuals and also in small groups of 2 to 5 and 10 persons at most.
- While the secondary data was collected from the different organizations that were involved, which included the annual and other reports of the Ministry of livestock, Fisheries and Animals Industries, from its Regional and Divisional Delegations, the Research Station for Fisheries and Oceanographic – Limbe, National Research Institute, NGOs and research center, online reading, and reference books.

3.2.2 Data Analysis

Data collected during the study was analyzed using mainly simple descriptive statistics which included totals, means, medians, percentages, tables and pie charts.

3.2.3. Structure of Artisanal Fishery in South West Region of Cameroon

The structure of the artisanal fishery along the coastal area of SWR of Cameroon is presented in Table 1, which was adapted from Njock 1987 and updated from report of a Regional and Divisional Delegations of the Ministry of Livestock, Fisheries and Animals Industries in Regional Delegation of Livestock, Animal Husbandry and Fisheries Limbe Cameroon (Cameroon Report, 2017).

Table 1: Structure of the Artisanal Fishery along the Coast of SW Region of Cameroon Distribution of Fishing site, Canoes and Catch

Coastal Division	Fish Landing Site	Total No of Canoes	Total Estimated No of Artisanal, Catch(t)	Ranked
Ndian Division	Bamusso			

	Idabato West I			
	Idabato West II			
	Ide-Dong Nanjo			
	Kombo Abosukulu			
	Komno Ausa			
	Kombo Adibai	3256	17254	29400
	Makora Tanda			
	Jabana			
	Bekumu			
	Njangassa			
Fako Division	Eyenge III			
	Eyenge II			
	Eyenge I			
	Bibundi			
	Sandje Native			
	Debunsha			
	Isobe			
	Bakingili			
	Ghanean			
	Batoke Native			
	Ngeme			
	Wovia			

	Limbe Dockyard	832	3172	9600
	Limbe Fish Market			
	Botaland			
	Bonaberi			
	Man O' War Bay			
	Mboko			
	Ijomabeta			
	Ijomboko			
	Mabeta			
	Mbomo I & II			

(Source: Njock, 1987)

3.4 Sampling Procedure

The population that was targeted consists of the following: -

- All the AF along the coastline area of the south west region of Cameroon.
- All the community-based rural organizations that have as main objectives the promotion of the artisanal fishery activities of its members in the coastal area of south west region of Cameroon.
- Fishmongers, especially wives of fishermen and other women who are specialized processors of dry/smoked fish, the catch received from fishermen before marketing.

The samples used in the study were drawn from the above population groups by stratified random sampling. The coastal area of the south west region of Cameroon was stratified into: 2 main areas based on the administrative divisions lines, that Fako and Ndian Divisions (See Table 1 above);

That is, from each of these 2 stratums, Ndian and Fako divisions and, 7 landing site villages were then randomly selected; 4 from Ndian Division and 3 from the Fako Division. It is evident from Table 1 that even though Fako Division has more landing sites, Ndian

Division has more artisanal fishery activities (more than triple the number of canoes, fishers and total catch). That is why Fako Division has almost double the number of landing site villages, 3 sites that were randomly selected from there and 4 from Ndian division. This enabled the author to capture more information from the areas with a higher number of artisanal fishery activities.

- Ten artisanal fishers were selected from each artisanal port and village also by random sampling to give a total of 70 artisanal fishers.
- Five fishmongers mainly fishers' wives and other women involved in processing (smoking) the catch before marketing. This resulted in a total of 35 surveyed.
- Also from each of the 7 landing site villages above, an artisanal oriented community-based/rural organization was selected also by random sampling to give a total of 7 community/rural organizations sampled for the study.

In addition to the above list, officials from the above structures were also interviewed for the study:

- 12 officials of different government agencies were also interviewed. This included officials from the Sub-Divisional, Divisional and Regional Delegations of the Ministry of Livestock, Fisheries and Animals Industries; Marine Marchande; a member of the Cameroon Defense Navy, and the Ministry of Transport.
- 6 officials of NGO involved in the artisanal fishery sector of the SWR of Cameroon. This includes South West Development Authority (SOWEDA) Buea.
- 2 officials from the Research Station for Fisheries and Oceanographic (IRAD) Batoke.
- 3 officials from other Parastatals MIDEPECAM.

The list of participatory community/rural organizations was obtained from the Divisional and or Provincial Delegation of the Ministry of Livestock, Fisheries and Animals Industries, or the Divisional and or Provincial Registry of Rural Organization of the Ministry of Agriculture in South West Buea - Cameroon.

The government of Cameroon and some international donor organizations, such

as the ADB, decided to use community-based organizations as a vehicle for their policies for poverty alleviation, and sustainable rural development in the country as a whole. Therefore, it becomes imperative that, the role the community-based organization approach has and will continue to play an important role in promoting sustainable artisanal fishing; fishing is the main economic and livelihood activity in the sub-urban and rural coastal area of SWR of Cameroon; particularly the creek areas of Kombo Adedjmo, Kombo Etindi, Isangele, Idiabato and the Bakassi peninsular area as a whole were investigated

CHAPTER IV

4.1. Analysis and Presentation of Results

4.1.1 Major constraint to SAF along the coastal area of the SWR of Cameroon

4.1.2. Illegal Unreported and Unregulated (IUU) Fishing;

IUU fishing was not only identified as a major threat to sustainable artisanal fishing in SWR, but it is also known to have serious overall negative socio-economic impacts on the coastal community. The term IUU fishing describes all sorts of fishing activities that fishers violate during fishing practices, by going beyond the fisheries law and regulations, which include improper fishing gear, overfishing (fishing in excess of quotas), fishing without a license, fishing in closed areas, or fishing prohibited species (FAO, 2016). IUU states that “theoretical analysis of the problem of IUU fishing constitutes one of the serious threats to the sustainable exploitation of living aquatic resources and marine biodiversity” (FAO, 2016).

IUU fishing effects on fisheries in West Africa have impacted over 40% of fish stocks harvested and unreported (Agnew et al., 2009), and as a result food security becomes threatened for over 2.6 billion people in the developing countries that depend on fish for protein (USAID, 2016). In Cameroon, the IUU fishery dimension is very high and has severely impacted the fisheries resources (resource degradation) and fish production (decrease in fish production) and lower incomes. In SWR illegal fishing (fishing without license) and piracy have been reported. This, of course, was linked to destructive fishing practices like bottom trawl fishing and the used of unselected small mesh gill nets, which are used to catch juvenile fish. As a result, this disrupts the natural growth of the marine ecosystem. There is also the illegal landing of fisheries products in foreign countries (especially Nigeria), whereas the law requires that all landings be undertaken in the country’s ports overall. This reduces the fish stock, employment, socio-economic repercussions on the coastal communities and in turn, contribute to higher turnover and eventually job losses because the unregulated catches are not recorded. The negative aspects of IUU fishing have raised serious concerned to the government of Cameroon,

non-governmental bodies, regional fisheries management and international organization for resolution.

4.1.2a Dominance of immigrants in the AF Sector

The AF sector in SWR of Cameroon as in the rest of the country, is dominated by immigrants with 85% from foreign countries, mainly Nigeria, Ghana and Benin (MINEPIA 2009, Djama 1992). In some villages in the Ndian Division, such as Bamusso, Idiabato, and most of Bakassi and Isangele sub divisions area, the immigrant fishers make up 88% of the total number of fishers (MINEPIA 2017). That is why they are able to form their own rural/community-based organizations, for instance the Nigerian Fishermen Association and the Ghanaian Fishermen Association, which in some cases are better organized. stronger and much more resourceful.

Table 2: Distribution of Fishermen and Women Actors along the SWR Coast of Cameroon according to Nationality

Actors/Nationality	Fishermen	%	Boat Owners	%	Fish Smokers	%	Fish Mongers	%	Total	%
Cameroonians	1547	18.5	719	26.75	393	18.4	466	73.5	3125	22.6
Nigerian	6334	75.9	1946	71.8	1613	75.6	161	25.5	10054	72.7
Ghanaians	283	3.4	12	0.4	59	2.8	1	0.2	335	2.6
Bennis	175	2.1	34	1.2	68	3.2	1	0.2	278	2.0
Togolese	4	0.05	3	0.1	0	0	4	0.6	11	0.1
Total	8343	100	2714	100	2133	100	631	100	13821	100

Source: (MINEPIA Report, 2009)

These are communities that are made up mostly of immigrant fishers, and it is a major constraint in the development of the AF sector in the SWR. They are mostly ignorant of the laws of the sector and are not prepared to respect them. These immigrants who seem to be living in the area on a temporal basis do not consider the sustainable exploitation of the fisheries sector resources as important, similar to the attitude towards the introduction of the purse seiner method of fisheries by the Ghanaian and Beninese in Cameroon in the early 1970s.

4.1.2b Trawler Transgressing by semi Industrial vessel

One of the major constraints to AF agreed upon by most, if not all the actors of the sector, is the destruction of artisanal fishing gears within the 2 NM zones limit by trawlers transgressing the EEZ (Chinese vessels). This occurs in areas restricted to non-commercial fishing operations according to the Cameroon Legislation, Law n° 96/12 of 1996 that outlines the method of fishing within the maritime zone on small scale fisheries 2NM and commercial fishing 3NM. This law can be enforced at any time during the day or at night, because during the daylight activities, each fisher can be identified through the registration number, company's name and flag at a longer distance (FAO, 2001). Due to shortages of fish in the sea, these trawlers trespass into the artisanal fishing grounds. This activity has led to the overexploitation of the marine resources and conflicts between the fishers in both sectors;

4.1.3 Unsustainable Fishing Practices:

There are several types of unsustainable fishing practices within the exclusive economic zone along the coast of SWR, and on the high seas beyond national jurisdiction. These practices include destructive fishing gear, overfishing, benthic trawlers, by-catches, illegal transshipment of marine resources and ghost nets

4.1.3a Destructive Fishing Gears and Practices.

There are different types of fishing gear used along the coastal zones of SWR, some of which are very destructive. Fishing gear refers to the tools used by fishers to catch fish and the use of such gears is called fishing method. These fishing gear includes gillnets (various mesh size), longlines (baited and unbaited), traps and castanet, hooks, purse seine and guns. According to FAO (2008), these destructive fishing gears are methods used by fishers that damage the marine ecosystem, particularly ghost fishing, dynamite fishing, and trawling activities (mostly commercial fishing vessels from China).

Different Mesh Size Nets.

Figure 4: Different Size and Types of Nets (blue net use by semi industrial Awasha), (white cotton net recommended by government) and (green plastic, the most use by artisanal fishermen) distribution center of MINDEPECAM (photo by M. Wabit 2018)

4.1.3b. The Use of Nets

In Cameroon the fishing sector utilizes different types of nets to catch fish, i.e. from simple nets used by artisanal fishers to the most complicated and sophisticated nets used by semi-industrial fishing vessels. The commercial fishery uses trawl nets, which have been proved to be very destructive on juvenile fish (30-40mm stretched mesh size). While the artisanal fishery uses gillnets with high selectivity on juveniles (4-7cm stretched mesh size) (Djama, 1992)). Amongst these nets the most destructive fishing nets are the benthic trawlers and dredgers because (the group rope and dicker chains dig into the muddy or sandy bottom of the seafloor, in order to dislodge shrimp and flat fish which are trapped into the trawls). The trawlers and dredgers drag across the seabed and scour the benthic habitat. As a result, large quantities of bottom material such as sand and mud where many invertebrates species for example polychets, crustaceans, gastropod and bivalves thrive are extracted from the bottom sea floor causing harmful disturbance and siltation, which impact the marine ecosystem and disrupt the food chain (FAO, 2001).

4.1.3c Gillnets

Gill nets are made of walls or sheets of meshes. Mesh size is determined by the size of the spaces provided within the net, which determine the size of fish to be captured (Wolf et al., 2015). Gillnet mesh sizes vary depending on the species targeted, but the standard size required is 5 by 30 inches (Bjordal, 2001).

4.1.3d The Drawing Chain Method

This method has been banned but is still being used around the Batoke area in the Fako Division. It involves artisanal fishers who cannot or do not want to go far into the sea. They identify an area near the shore, cast their net into a large circle, and it drops down to the seafloor. The net is then pulled together, sweeping everything within the circle out onto the land on the seashore. This fishing method captures large quantities of sea floor materials, such as mud, sand, leaves, and other debris in which benthic organisms thrive. This disrupts the food chain and the ecosystem as a whole.

4.1.3e The Use of Small Mesh Size

Another destructive fishing gear used by commercial fishery and artisanal fishers in SWR is the illegal small mesh size net or mosquito nets, commonly used along the coastal area especially in the creek of the Ndian Division by the artisanal fishers, where they scope all the juvenile fish into the net, of which the net size is mostly 3.5, 4 or 4.5 inches. Article 23 – 37 of Decree No. 95/413/PM of 20/06/1995 has banned the use of small fishing nets in sensitive sites in juvenile fishing areas. This practice is still done in Cameroon even though a sustainable proposed cotton net has been given to them at a subsidized rate. As a result, this method will lead to stock depletion as well as create a socio-economic loss in this region.

4.1.3f Ghost Nets

Ghost nets are nets or other fishing gears that are abandoned, lost or discarded in the seas by fishers. These include gillnets, hooks, longlines, and plastic trawl nets, which kill or entangle marine organisms in the sea. This problem mostly occurs when artisanal fishers go fishing at sea, and because of extreme weather or high tidal and waves in the ocean, they lose their nets. This happens to nearly all of the artisanal fishermen that were interviewed. In a year, a single fisherman can lose one to two nets in the ocean. The

consequences are much more severe if the nets lost are made of plastic, instead of cotton material. The lost nets will float about in the sea, with fish and other marine animals entangled in them. Since plastic does not decay easily, the lost nets will linger for a long time, causing a significant threat to living sea creatures. This alone contributes to 10% of annual marine debris from a total global estimate of 6.5 million tons each year (Gilman, 2015)

4.1.3g Dynamite Fishing

The use of explosives can kill large amounts of fish within close proximity. The explosive is dispensed into the water and detonated, which immediately kills a large number of fish within the local environment, and it has been reported by some fishers that the Chinese illegally used some types of chemicals to attract fish into their nets within the fishing grounds. This is prevalent with the mackerel, barrel, freshwater fish and shrimps. According to Ntaryike, 2016), local fishers in the coastal borders of Cameroon reported fish with high contamination levels of mercury. The national newspaper Cameroon Tribune (2016) reported that some local fishers use toxic chemicals in order to improve their catch (Gamaline 40). Article 18 of Cameroon Law 94/01 of 20/01/1994 bans the use of toxic discharges, and waste into the marine environment by industries and other users, and recommends obligatory treatment. Meanwhile, those involved in processing smoked and dry fish use plastics and worn out car tires to dry their fish. However, some fishers use hooks and lines as their main fishing gears. They also use a chemical, – Gamaline 40, to catch some preferred baits such as mice and lizards which they use for hook fishing.

4.1.3.h By-catch

Accordingly, Article 62 of UNCLOS, which Cameroon has ratified, provides for regulations to be established by national states that fish in their EEZ, by giving specific recommendations of licensing, species to be caught, catch quotas, data collection and reporting, the types sizes, specific research programs, amount of gear, closed seasons and areas of fishing, the types, sizes and number of fishing vessels that may be used. It also allows for fixing the age, size of fish and other species that may be caught and the bans of illegal exportation and transshipment and, incidental catches (Article 61(4) LOS

Convention). This is mostly the case where fishers in the course of fishing, catch species which they do not need or species not authorized by the authorities (Davies et al, 2009). Vulnerable marine species are sea turtles, seabirds, vertebrate species, whales and dolphin which thrive in pelagic habitats of both tropical and non-tropical region (Njock 1990). Often these species are incidentally entrapped, entangled or hooked by different fishing gears intended for a different species, the unwanted fish or other animals that are thrown back into the sea, and are usually already dead. However, by-catches are unavoidable because the majority of the fishing gear used is for multispecies and is non-selective fishing gear such as trawls. A record of 7.3 million mts of by-catch is discarded annually in the world from a commercial landed catch of 78.4 million mts (Kelleher, 2005),

4.1.4 Inexistence or Poor Collection and Interpretation of Fishing Statistics

Even though this was identified as an unsustainable artisanal fisheries constraint in SWR, it was widely reported that in Cameroon as a whole, there is no data collection system in place for both marine and inland fishing (Folack 2009). Most of the existing data has been collected within the framework of university theses (PhD and MSc) in foreign universities, often funded with grants. However, the government through related and relevant institutions such as IRAD, MINEPIA and MINEPAT is supposed to be the responsible authority for collecting and interpreting data in the sector. However, their effort is either too little or grossly insufficient due to the lack of resources such as funding, manpower and necessary equipment to collect any meaningful data that can be used for proper management of the fisheries resources.

4.1.5 Indiscipline and the Non Respect of the Laws

The absence of fisheries inspectors and a Command Center for Control Brigade (BCSAP) that has the responsibility to put in place a Monitory, Control and Surveillance System (MCS) has resulted in lawlessness and indiscipline in the sector. This lack of a good effective MSC system has aggravated unsustainable practices such as the use of inappropriate and banned fishing gears like very small mesh size fishing nets, fishing with explosives and chemicals. In addition, there are increased numbers of foreigners who reside and fish illegally in SWR and most of the time land their products abroad, predominantly Nigeria in their countries. In this region a non-regulatory fishery seems to

be the order of the day. For instance, there is a poorly functioning system for deliverance of fishing licenses without which the control of artisanal activities is nearly impossible. One of the prerequisites for control in the artisanal fisheries sector is acquiring a permit by each artisanal fisher. Illegal, fishing (fishing without license) is a major problem that has been widely reported by different authors in the fisheries sector and researchers in Cameroon (Folack, 2009). Most often this problem is said to be a result of the poor monitoring regime. Some members of the communities, mostly in the creek of the Ndian Division, have specialized in the illegal exploitation of mangrove wood by exporting it to Nigeria. This is aggravating an already serious problem of deforestation and destruction of the mangrove ecosystem of the SWR of Cameroon.

Pair trawling by vessels of Chinese origin and the transgressing of the 3 nautical mile limit is, creating conflict with artisanal fisheries and goes unchecked and unpunished. Illegal trawling and transgressing the 3 nautical mile limit results in direct conflict with the artisanal fishers, with trawlers destroying their nets (Djama,1992).

When provisions are made for penalties against some illegal activities and lawlessness, the penalties, which are either not applied or enforced and in the few instances where attempts have been made to enforce some penalties, they are too low to discourage this behavior from stopping.

4.1.6 Lack of Security at Sea

There is also the reported problem of insecurity at sea as a result of sea pirates, who attack fishing boats with automatic weapons, torture the fishers and seize their catches and money, especially in the Bakassi areas of the Ndian Division (MINEPIA 2009). The catches are then taken to Nigeria where they are exported to the European Union under Nigerian label (Chambeng & Ngoande, 2001).

4.1.7 Effect of Climate Change

The effect of climate change on the fisheries resources along the coastline of SWR has not been well researched or documented. However, in fishing camps of Adiata, Barracks and Bamusso, it was reported that sea level has risen, and high wave action has increased flooding with loss of life and materials. In some places such as Cap Cameroon in the littoral region, the effect is most pronounced where some major

installations by the government, homes and schools have been destroyed and most of the land is permanently occupied by water (Chiambeng & Holvoet, 2008). In Barrack, Bamusso and Adiata camps fishers attempt to fight flooding by building make shift houses on stilts using mangrove wood, and construct local bridges that serve as pathways for movement from one place to another in the camps (Chaiambeng 2011).

Figure 5; Traditional Bridge pathway and shift homes of Kange Fishing Port (Photo of Folack,2007)

4.1.8. Pollution

4.1.8a. Agricultural Chemicals

Mount Cameroon is the second highest volcanic mountain (4,100m) in Africa, and is located along the coast of SWR of Cameroon. The mountain is still very active as it last eruption took place in February 2012. The active mountain its the origin of the very fertile soil found in the Fako Division and part of the Ndian Division. Secondly, the Debundscha which has the second highest record of rainfall in the world is located on the leeward side of this mountain. Combined with other favorable climatic factors, this area is very good for agricultural production. That is why most of the largest agricultural plantations in the

country are located along this coastal area of the SWR. The plantation includes CDC palm and rubber plantations, palmo palm plantations, banana plantations, small and large private palms, cocoa and coffee plantations. As a result, there is a high use of chemicals in the form of fertilizers and pesticides in these areas. This heavy use of agricultural chemical, result in most of the chemicals seeping through the soil into the sea, which is of little or no distance from where the chemicals are being used.

4.1.8b Solid Waste Pollution

Solid waste in Down Beach Limbe

Figure 6: photo my M Wabit 2018

solid waste pollution comprises solid waste from coastal cities like Limbe, Idenau, Ndian and industries that are dumped into the environment and eventually find their way into the sea. There is also solid waste from the riparian communities of the area which also find their way into the sea. This solid waste is a form of marine debris which includes plastic, pieces of nets, cans, hand bags and glassware that can be harmful to marine species such as seabirds, turtles and marine mammals' entanglement.

4.1.8c Hydrocarbon Product Transportation

There is a heavy transportation of hydrocarbon products such as fuel in the ocean area of Ndian and Fako divisions, between Nigeria and Cameroon, using large and small wooden boats or canoes. As a result of accidents occurring during bad weather, especially in the rainy season, there are occasional spills of these hydrocarbon products at sea. This negatively affects the local marine species and ecosystem.

Hydrocarbon products transportation in the sea of Limbe

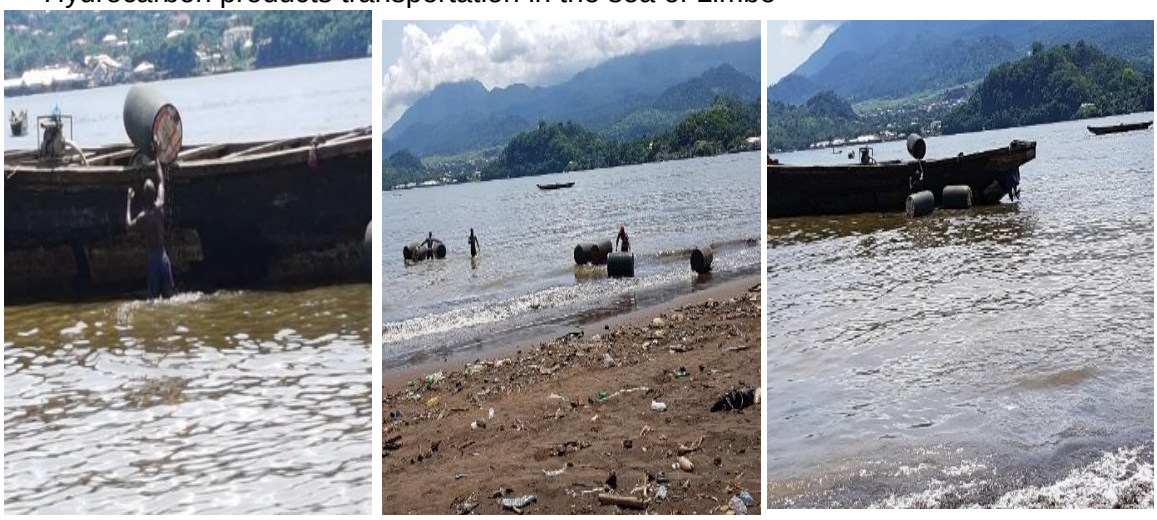


Figure 7: (photo taken by M Wabit 2018)

4.1.9. Mangrove Deforestation

Artisanal fishing is one of the major economic activities for communities along the coast line of Cameroon. Unlike industrial fisheries, the catch of artisanal fishers often suffers post capture losses due to poor handling and/or lack or preservation facilities. In most fishing communities there is no electricity such as preservation by freezing which is hardly used. This justified why the commonly used method of fish preservation is smoking. This traditional method requires the use of high quantities of wood of any available species collected from near-by forests. The consequence of this practice is the deforestation and degradation of mangrove ecosystems, destruction of spawning ground of some fish species and deterioration of the quality of smoked fish. Although new methods have been developed for fish preservation, smoking is still widely used. This has justified the introduction of the improved smoking ban by the SOWEDA, aimed at

reducing pressure on the SW mangrove forest, labor input and improving the quality of smoked fish. Since the introduction of the improved ban in 2005 by SOWEDA, there has been no effective follow-up to ensure its application.

4.1.9a Traditional/suspended Ban and Metal (Zinc) Sheet Ban

Traditional Sheet Zine Ban in Idenau

Figure 8: (photo by M. Wabit 2018)

The traditional bans consist of a wire mesh, which is on suspended on metal rods and the semi –improved bans are constructed using iron corrugated sheets

4.1.9bImproved Banda

The improved ban is constructed with cement blocks, uses a small quantity of wood and allows minimal heat loss during smoking. It also reduces the effect of heat on the health of fish smokers and forest degradation.

Improved Banda Limbe - Batoke

Figure 9: (photo M. Wabit 2018)

4.1.9c Material and Methods

This research was carried out in the fishing communities of Limbe Dockyard, Bonabri, Batoke, Idenau, Njjonji, Isobe, Debunscha which are all located in the south west region of Cameroon. A total of 50 women involved in fishing smoking were interviewed using an interview guide and their responses recorded.

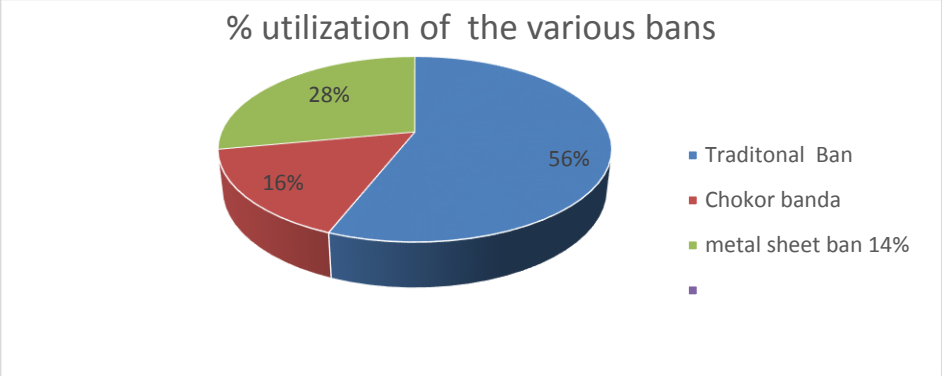


Figure 10: Different level of Bans used in SWR (M. Wabit 2018)

4.1.9d Results

The utilization of the various bans stands at over 56% of the fish smokers still use traditional smoking ban. This has resulted in increasing pressure on coastal forests with consequences of high deforestation and in some areas a complete loss of the mangrove forest resources.

Table 3: Comparison of the various fish smoking bans

Type of ban/features	Traditional /suspended ban	Metal sheet band	Chorkor banda
Amount of wood used in smoking	6kg	4kg	3kg
Time used	32 hours	15hours	10hours
Cost of wood used	3000CFAF	2000CFAF	1500CFAF

(Produced by M. Wabit 2018)

The improved ban is more economical in terms of the consumption of fuel wood quantity (3kg), time required for smoking a set unit weight of fish (10 hours) as compared to the traditional ban and metal sheet ban.

4.1.10 Wood exploitation versus forest conservation

Feka and Manzano, (2008) describe how more than half of Cameroon's population use wood as a principal energy source. According to Topa et al, (2010) the annual wood use in Cameroon is estimated at 9.8 – 12 million m3. In coastal zones where most fishing communities are found, over 40% of fuel wood used is mangrove species. The high rate of exploitation of the coastal areas, especially the Ndian Division and Fako – Tiko Sub Division, without reforestation has led to ecological succession where in some cases the mangrove forest has been replaced by wild palm bushes. It is important to note that the wild palms have fibrous roots and as such are always blown off during high tide leaving behind large muddy areas and a degraded ecosystem.

Figure 11: Mangrove usage and depleting state of the creek of Tiko (photo Wabit 2018)

Fisheries product processing especially smoking, is accompanied by large scale distribution of the mangrove forest. Mangrove forest destruction is much more intensive around the creek of Tiko, Ndian and Idenau. This is due to the lack of storage facilities as a result of no source of energy supply. Even though there is a Para public facility at Limbe Dockyard and in the Ndian Division that provide ice blocks at lower cost to fishers and mongers for cold storage facilities for their products, this is insufficient and unreliable due to the unsteady supply of electricity.

Many people still prefer the use of mangrove for processing and preservation. Fish smokers and mongers prefer fish smoked with mangrove wood. Some smokers claimed that this is because their consumers prefer fish smoked with mangrove wood, which they said has bright color, looks attractive and smells better, as compared to that smoked with rubber tree, which they believe is harmful to humans. Rubber trees are not eaten by ants and other insects, and any tree not eaten by these insects is harmful to humankind. Furthermore, rubber trees are very expensive and give dark unpleasant color to fish during processing, which may cause cancer.

In addition, mangrove trees are very solid, so they are used for construction of boats and house. They are also used to produce charcoal and fuel wood for local consumers. Some community members illegally export mangrove wood to neighboring countries such as Nigeria.

4.2 Structural/Functional Organization of the C/RO for the purpose of promoting SAF and eliminating or mitigating the main constraints to SAF

4.2.1. What are Community-Based Organizations?

In this study the community-based organizations are referred to as a group of organizations formed under a series of legislation promulgated in Cameroon around 1992, with the support of some international organization such as UNDP, USAID and ADB. These laws include

- The law related to Co-operative Societies and Common Initiative Groups: Law No 92/006 of 14 August 1992,
- The Law related to Economic Interest Groups: Law No 93/015 of December 1993,
- Law related to Association Law No 73/15 of 7 December, 1973,

These laws were enacted within the framework of the Cameroon Poverty Reduction Programmes. The main idea behind the two pieces of legislation was to create a favorable legal environment for a group of people from any sector, and at all levels of the economy, to be able to come together in an organization that would enable them to pool their efforts and resources together, in order to pursue a common economic activity of their choice. The types of organizations created under these laws includes

- The cooperative society,
- The Common Initiative Group,
- Associations, and
- Economic Interest Groups.

4.2.2 Purpose of Artisanal Rural/Community-Based Organizations

Artisanal community-based organizations are structures formed by a group of operators in the artisanal industry, which enable them pool together their resources in order to pursue an economic activity of their choice, in the sector. Cameroon artisanal fishers in general, and SWR in particular, are mostly traditional and subsistence. They are small-scale, use low or elementary technology, with little or no fishing skills and most of the time, are people who lack employment elsewhere from within the country and or from other countries like Nigeria, Ghana and Benin. They who have little or no interest in the sustainability of this sector (fishery) of their host country. Within the framework of the Cameroon Poverty Reduction Programmes a favorable legislative environment was created that could enable the most vulnerable of the different sectors of the economy such as artisanal fisheries, agriculture, aquaculture and livestock, come together in a rural community-based organization of their choice to promote an economic activity of common interest. The main activity along the coastline of SWR and Cameroon as a whole, and within the creeks of the Ndian Division is artisanal fishing. With the rapid growing population of the country's coastal area at 2.59%, and the documented fact that, the different Cameroon fishery resources are either at the critical state of over-exploitation, or at best, are at full exploitation state. It, therefore, has become paramount that the country's fishing sectors as a whole, and artisanal fisherman, and rural/community-based organizations in particular should address the sustainability problem of the sector's resources.

4.2.3 How are Artisanal Fishermen CBR Organizations Formed?

According to the provisions of the Law No 92/006 of August 1992, and its text of application that govern the creation of these types of rural/community-based organizations, at least five people, in the case of Economic Interest Groups (EIG), (article 50(1) of Law No 92/006 of 14th August, 1992), and at least seven people in the case of a

cooperative society, (under Article 8 of Law No 92/006 of 14th August 1992), who have a common economic activity in the area of artisanal fisheries, can come together to form these Rural/Community-Based Organizations respectively. These founding members come together in a Constituent Assembly to elaborate and adopt articles of association, appoint a President, and proceed to register the organization at the Registry Division's office.

Different CBROs in SWR

Figure 12: (photo by M. Wabit 2018)

4.2.4 Organizational Structure of Artisanal Fisheries C/BRO

4.2.4a Cooperative Society (coop):

The organizational structure of a cooperative societies comprises;

1. Members: Cooperative society are made of at least 7 individuals or corporate

bodies who share a common economic interest.

2. The General Assembly or meeting (GA) comprising all members is the supreme deliberation and decision-making organ of the cooperative society (section 154).
3. Board of Director (BOD) is the administrative and management organ of the cooperative society, elected and report to the General Assembly (section 22(1)). The BOD may delegate some of its powers, particularly for the day-to-day running of the cooperative society, to a chairman section (sec 25), or a manager or any other person.
4. Supervisory Committee: A mandatory organ for the internal supervision of the cooperative society (section 26(1), elected by and reported to the General Assembly.
5. The Manager: Not mandatory/optional, usually a professional appointed by and reported to the BOD (Section22).

Organizational Chart of a Cooperative Society

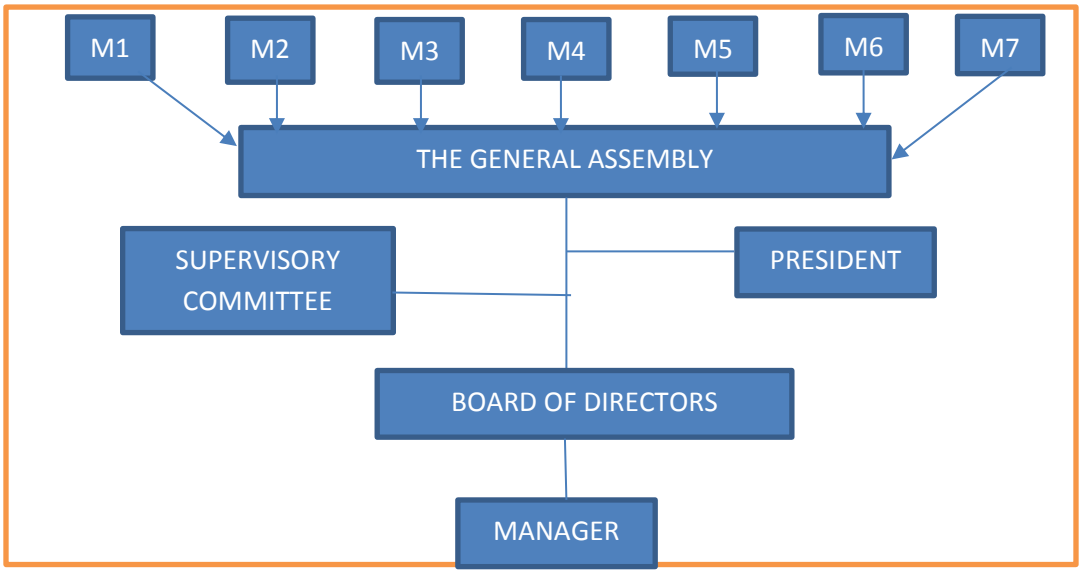


Figure 13:(by M. Wabit 2018)

4.2.4b Common Initiative Group(CIG): (part III of Law No 92/006).

CIG is a very simplified form of organization compared to cooperative society, comprised of a minimum of at least 5 members, by a written declaration in a constituent meeting, in which a delegate (charged with representing the CIG in all civil matters) is

also elected and the articles of association are established, after which the CIG is registered at the Registry of Cooperative and Common Initiative Group (Section 50).

The only mandatory organ is the General Meeting (GM) of the CIG, that appoint a delegate who is in charge of representing the CIG in all civil matters. Other organs be may added as deemed necessary by the GM.

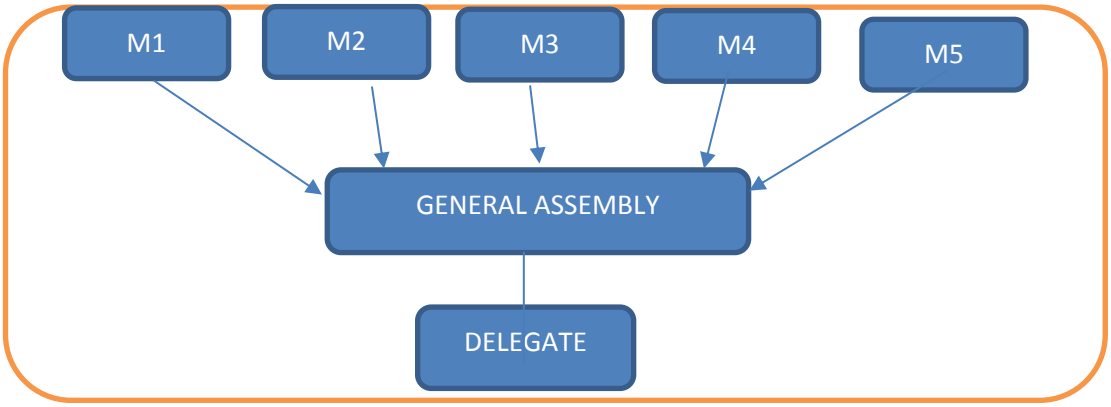


Figure 14: Formation of a CIG of CBROs (By M. Wabit 2018)

4.2.4c Unions and Federations:

A union of Cooperatives and/or Common Initiative Group can be formed by two or more such organizations (section 9(3) and 50(2) respectively). Two or more unions can form a federation.

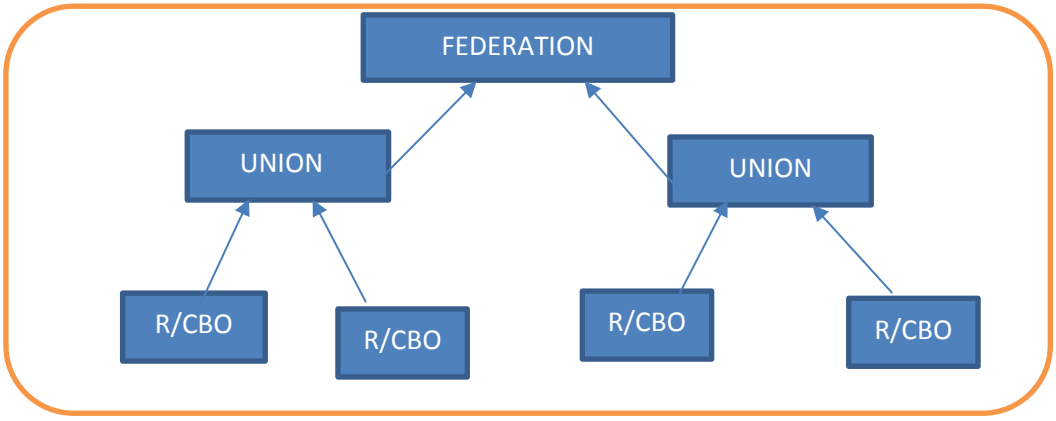


Figure 15: Formation of Unions and Federation of R/CBO (By M. Wabit 2018)

4.2.5 Some Artisanal Fisheries R/CBOs Consulted During this Research

The following R/CBOs where consulted by the author within the framework of this study.

The following indigenous fisheries rural organization associations were visited and provided. valuable contribution to this study.

Table 4: R/CBOs Consulted during this Research

Name of C/RO	Acronyms	Type of C/RO	Membership	
			Total	Active
Ocean of Life Foundation Limbe	OLIFO	CIG	12	9
The Awashia Fishing Group	AFG	CIG	25	20
Limbe Fisheries Association Network	LIFAN	Association	12	12
The Mosobo Fisheries Group	MFG	CIG	10	9
West Coast Fisheries Association Network	WCFAN	Association	18	14
Debuncha's Drivers Fisheries Group	DDFG	CIG	16	11
Ghanaians Fishermen Association	GFA	Association	20	18
Nigerian Fishermen Association	NFA	Association	26	23
Cameroon Fisheries Association	CFA	Association	10	7
Fisheries Trader Union	FTU	Union	12	12
Tiko Fishermen Association	TFA	Association	8	7
Area Boys Batoke	ABB	Informal Group	11	11
Bamuso Women CIG	BW	CIG	17	12

The type of R/CBOs found along the SWR coastline are as follows: common initiative groups, associations and co-operative societies, informal R/CBOs, such as the

Batoke Area Boys are not registered. The Area Boys, who are (local laborers in the SWR), organized themselves around landing ports and do fishery jobs, such as pulling canoes out of the water when they land from fishing, they also, remove the catch and sell to the women groups that process (smoke) it or to other mongers, and they remove the fish from the nest, arrange the nets and finally supply and split wood for fish smoking R/CBOs such as the Nigeria Fishermen Association, Ghana Fishermen Association and the Cameroon Fishermen Association are citizens of the respective countries involved in the artisanal fisheries sector in the area of study. For instance, the Nigeria Fishermen Association members are immigrants from Nigeria involved in artisanal fisheries in the SWR.

Nature of work done by the Area Boys in Dockyard

Figure 16: (photo by M. Wabit 2018)

There are also R/CBOs like the Bamuso women CIG that are made of wives of fishers and other women who are not fishers, but whose main function is to collect, buy and smoke the catch.

4.3. Strengths/weaknesses of CB/ROs as an approach to SAF in SWR

4.3.1. Effective enhancement of members' technical know-how on SAF

Through capacity building and mobilization and judicious use or management of resources, SAF capacity building takes place during education and sensitization meetings, organized member's training sessions, workshops, seminars and exchange visits. Easy follow-up arrangements, by members of R/CBOs, who greatly reduce most

of the prevalent problems like illiteracy, accessibility or movement and costs that are common in the remote rural areas, where most of the small scale, subsistence artisanal fishers, the majority of whom are mostly uneducated are located in areas such as the Bakassi area.

4.3.2. Peer Monitoring and Evaluation (M & E) and Follow-up

Peer M&E and follow-up of the implementation and adoption of a newly introduced sustainable fishing approach practice, by members of the group is cheaper and much more effective. For instance, members of the Bamuso Women Group CIG, who smoke fish, after they were trained on the over-exploitation of mangrove for fish smoking, they are gradually turning to rubber and other trees for fish smoking. However, but whenever they see a large amount of mangrove wood anywhere in the village or camp, they will search for the owner if he/she is one of their members, they will remind him/her of the training and their commitment to reduce the unsustainable exploitation of mangroves for smoking fish. They agreed that this peer M&E and follow up is much more effective and less costly than when some government officers from the city occasionally visit to inquire and instruct them what to do in a language (English) they do not even fully understand. There is also continuity of technical support through other and more enlighten members of the R/CBO.

4.3.3. The Community-based Organizations' Skills Development;

The skills development that are offered to the CBRO members included new and sustainable fishing practices. Government officials and NGOs prefer to work collectively with artisanal fishers through their community-based organizations rather than with individuals.

4.3.4. Easy access to quality supplies and services at reasonable lower cost

The community-based organization enables the small scale resource poor fishers, to buy their supplies and services together, which offers a much lower cost. There are many programs by the government, NGOs and para public organizations, which the small poor artisanal fishermen can only benefit from when they are associated in a group. For instance, there is a program by the government through the Ministry of Fisheries and

Livestock (MINEPIA), which gives free boats, for example (canoes, motorize engine and cotton nets) to a group of five people. That is one boat to five people. The artisanal fisher can only benefit from this program through the rural/community-based organizations since they are already organized. Administrative bottlenecks are also easier to overcome in such community-based organizations than on an individual's basis. These free boats may come with prescribed sustainable best practice packages. This best practices packages are more effectively introduced, including follow-up, monitoring and evaluation through community-based organizations, by trying to reach the artisanal fishers individually.

Beneficiaries of community-based organization may receive these boats with a package of sustainable fisheries exploitation good practices packages. Further, most small scale fishers live in remote areas and, faraway fishing villages in the creeks, like the Bakassi areas, far from cities where government offices, and other spots where artisanal fisheries suppliers and services are available. For instance, good nets and other suppliers that encourage suitable fishing available to fishermen through the Artisanal Maritime Fisheries Development Agency are located in Limbe, and Idenau at the (end of good access roads). These are very far from Bakasi and many other fishing villages. Through their community-based organizations and, fishers can negotiate the supply of these supplies and services in a group context, which is cheaper and faster to accomplish.

4.3.5. Self-Finance

In a group, the fishers, most of whom are small scale and, resource poor, can self-finance themselves by a form of period contribution called "njangi" and/or "Retained Earning"

- "Njangi" is a local system of self-financing, where at the end of a given period, (e.g. weekly, bi-weekly or monthly), a certain amount of money is contributed and given to one of its members. Weekly or Monthly njangi are done periodically, until all the members receive the contribution. Njangis are loans with a zero interest rate.
- Retained earnings occur mostly in rural community based organizations where

members sell products thought their organization. Every time members' produce are sale, a certain amount of money is retained and saved. This money is then used to acquire inputs and services, which if left on their own, the small scale resource poor fishers would be unable to acquire or buy. With retained earnings, the money is offered to members at little or no interest, which is determined by the member. In some cases, quality supplies and services are purchased and given to members, instead of providing them with cash.

4.3.6a. An easy mean to get feedback from fishers

Implementing and adopting new technology after receiving good data responds which will aim at promoting sustainable practices from the fishers**.** Just as it is easy to introduce new technology and fishing practice through the community based organizations, CBROs are the most effective mechanism for feedback on the programs, as compared to surveying individual fishers.

4.3.6b. Weaknesses of CBROs as an approach to SAF

In some organizations, members have lost interest in activities and running CBROs. One or a few members hijack the CBROs, and exploit or mismanage the organization for their own advantage. The researcher visited and organized those members who had abandoned the CBROs to the President of some associations who had received a canoe and other packages from the government and improved nets from MINDEPECAM in the name of members which he kept for himself.

By law the R//CBOs are democratic. Members sometimes claim that, this makes the decision making process very difficult. If a new sustainable fishing package is introduced, it is important for all the members to be on board. If there are members who do not agree with the decision to adopt the new packages, they may become inactive, and many may be completely opposed to the new practice.

CHAPTER V

5.1. Result, Discussion, Recommendation and Conclusion

5.1.1 Results and Discussion.

Table 5: Regional Distribution of Fishermen and Women Actors along the SWR Coast of Cameroon according to Nationality

Actors/Nationality	Fishermen	%	Boat Owners	%	Fish Smokers	%	Fish Mongers	%	Total	%
Cameroonians	1547	18.5	719	26.75	393	18.4	466	73.5	3125	22.6
Nigerian	6334	75.9	1946	71.8	1613	75.6	161	25.5	10054	72.7
Ghanaians	283	3.4	12	0.4	59	2.8	1	0.2	335	2.6
Bennis	175	2.1	34	1.2	68	3.2	1	0.2	278	2.0
Togolese	4	0.05	3	0.1	0	0	4	0.6	11	0.1
Total	8343	100	2714	100	2133	100	631	100	13821	100

Source: (MINEPIA 2017)

5.1.2 Impact Analysis of Distribution of AF in SWR According to Nationalities

Table 4 shows that the artisanal fisheries sector in SWR, just like in Cameroon as a whole, is dominated by foreigners, mostly immigrants from Nigeria, who make up 72.7% of the total number of fishers and fish workers. They make up 75.9%, of the artisanal fishers, and 71.8% of boat and canoes owners. There are also artisanal fishers from Ghana, Benin and Togo. The Cameroon nationals in the sector make up only 22.6% of the (artisanal fishers and fish workers). They make up only 18.5% of the artisanal fishers and own only 26.5% of the boats and canoes. However, Cameroon nationals make up the majority of fish mongers at 73.5% of the total.

The fact that this artisanal fisheries sector is made up mostly of foreign fishers is one of the greatest constraints to the sustainable exploitation of the sectors resources. They are mostly ignorant of the local, national and international laws of the sector and are unwilling to respect them. They live in the community on a seasonal basis.

Sustainability problems originating from the dominancy of the sector by immigrant fishers includes:

1. The illegal landing of fisheries products in foreign countries, especially Nigeria, whereas the law requires that all landing be done in the country and if need be, their exploited be done following normal customs procedures (Douffissa, 2007)
2. Destruction of the mangroves forests for illegal exportation of mangrove wood to Nigeria by some members of the community. This aggravates the already over-exploitation situation of the mangroves forest, making it worse. This massive deforestation of mangroves forest, especially in the Bakassi area, is very bad for sustainable management of the fisheries given the important role played by mangroves in fisheries as it is a nursery ground for fishes and a home for many aquatic species (FAO, 2005).
3. Security problems at sea involve piracy. There are regular reports of pirates who attack fishing boats and canoes with automatic weapons, seizing the fishers' catch and money. The catches are then taken to Nigeria where they are exported to the European Union under Nigerian label (Chiambeng & Ngoande, 2011)
4. There is also the problem of pair trawling by vessels of Chinese origin, and transgression of the 3 NM in violation of both national and international laws. This illegal trawling and transgressing of the 3NM result in direct conflict with artisanal fisheries, with the trawlers, destroying their nets (Djama, 1992).

It is highly recommended in section 5.2.8, that the government of Cameroon should initiate the effort to regulate and coordinate the migration especially immigration of artisanal fisheries and fish workers across national borders, among the respective governments. The governments should work with local fisheries communities, and other artisanal fisheries operator, to create an appropriate framework to allow for fair and adequate integration of migrants who engage in sustainable use of fisheries resources, and who do not undermine local communities. Furthermore, they should respect all of the sectors' law, including the necessary policies and management measures in consultation with artisanal rural community-based organizations and any other fisheries organizations and/or institutions

5.3. Training and Education of CB/ROs' Members on the Need for Sustainable Management

5.3.1. Fisheries Resources

Table 5**:** CB/RO Training Meeting on SAF, Member and % of Members in Attendance

Names of C/RO	**Active Member**	**No of Training on SAF**	**Dates of Meetings**	**Members in Attendance**	**% of Members in Attendance**
Bamusso Women Fish Group	12	2	22/6/2016	10	83
			13/3/2017	8	67
Mosobo Fishers Group	8	1	04/09/2016	8	100
Ocean of Life Foundation Group	9	3	01/16/2014	9	100
			07/07/2015	7	78
			21/04/2017	8	89
Area Boys Batoke	11	0	0	0	0
Awasha Fishers Group	20	2	19/05/2016	18	90
			12/04/2018	16	80
Nigerian Fishermen Association	23	3	16/11/2014	12	52
			03/08/2017	20	87
			05/02/2018	16	70
Fish Trader Union	12	3	13/08/2010	10	83
			26/11/2014	07	58
			20/07/2016	11	92

West Coast Fisheries Association	14	2	18/08/2016	10	71
			03/05/2018	06	43

Tables 5: Training Meetings attended by C/BRO IN SWR (Produced by M. Wabit 2018)

The above table depicts a summary analysis of the training documentations (training program, notes, and reports) of some CB/ROs in the SWR, it takes a detailed look the participation of the members of the CB/RO, From the study of the training documentation of these Community-based organizations, it can be concluded that:

- Most of the CB/ROs carried out training on most of the unsustainable artisanal fishing practices listed earlier in Chapter 4.
- It was also concluded that most of the training was attained by the majority of members in most cases.
- From the analysis above it evident that 56% fish smokers still use their traditional fish smoking bans. This implies the exploitation pressure on the forest that is still high and even increasing as the number of fish smokers continue to increase. It is recommended that efforts be made to introduce and enable fish smokers to start using the chorkor Banda, which reduces cost in terms of wood used and the amount of heat directly reaching the fish smokers, thereby reducing adverse effect of overheating on human health. Mangrove nurseries should be established in coastal municipalities to plant and rehabilitate the destroyed parts of the mangrove forest.

5.4. Recommendations

Unsustainable fishing methods /activities is a critical endemic problem in the rural coastal areas of SWR of Cameroon and the Cameroon fisheries industry in general. It is also a threat to the livelihood of the generally small-scale, resource poor artisanal fishers in the SWR of Cameroon who depend almost entirely on fishing to support their family. Promotion of sustainable artisanal fisheries is also the cornerstone of Government of Cameroon policy to fight against poverty in the suburban and rural coastal area of the country where fishing is the main economic activity of the communities.

5.4.1. Capacity Building

Artisanal fishers in SWR are small-scale, resource-poor, vulnerable and marginalized. All stakeholders of the sector agree that one of the most critical sustainability support action needed by the community-based rural organizations is capacity building. They need capacity building in order to enable them to participate in the decision making process and they need capacity building in order to enable them to better exploit market opportunities. FAO (2009), underscores the importance of building the capacity of small scale, vulnerable and marginalized fishing communities in order to improve their resilience and adaptive capacity in relation to climate change adaptation and disaster risk management. The community-based organization's capacity should be enhanced by training, seminars and workshops to enable them to come together in unions and federations as provided for by existing laws (No 92/006 of 14 August 1992). If they are to be adequately represented at the highest levels of decision making nationally, regionally and internationally, the small-scale, resource poor, vulnerable and marginalized artisanal fishers in SWR of Cameroon should be improved.

5.4.2 The Need to Form Unions and Federations

Vertical union of the community-based organizations, to form unions and federations will provide the small scale resources poor, artisanal fishers in SWR with the capacity to self-represent at the highest levels of decision making. Forming Unions and Federations will empower the community-based rural organizations with the needed capacity to lobby for the individual artisanal fishers at national, regional and internationally levels. In marking their products, the union and federation will increase their bargaining power and eliminate the middleman, which will result in increased earning per unit effort to the artisanal fishers. The community-based rural organizations through their unions and federations will be able to hire the service of high quality, competent leaders or managers, to improve their performance at all levels. In a federation the small scale artisanal fishers will bring in their products together, to meet the required volume and pay enough attention to grading and standardization of their products, in order to meet the competitive requirements of international markets.

5.4.3 Livelihood Diversification to support sustainable AF resources exploitation

The community-based organizations and other operators of the sector recognized the wildly documented reality that the SWR artisanal fisheries sector, and that of Cameroon as a whole, is over-exploited or at best fully exploited. There is also the fact that the coastal population of Cameroon is increasing at a rate of 2.59% per year (World Bank, 2018), hence the fishing community continues to increase the pressure on fishing resources. The community-based organizations strongly recommend that the government support the fishing community livelihood, diversification effort, in terms of aquaculture, in order to reduce the almost total dependence and over-exploitation of the fishing resources. FAO (2001), also recommended that states and other stakeholders of the small scale fishing communities, should support already existing, or the development of complementary and alternative income generating opportunities for small scale fishing communities in support of sustainable resource utilization by livelihood diversification. The role of artisanal fishing in local economies and the link of the sub-sector to the wider economy, need to be recognized and their benefits to Cameroon society accordingly. Artisanal fishing communities should equitably benefit from development such as community-based tourism and responsible small scale aquaculture.

5.4.4 Holistic Approach to Sustainable Artisanal Fisheries in SWR

The community-based rural organizations expressed the need for the government to support them to put in place an integrated and holistic approach to sustainable fishing to improve better addressed issues such as pollution, in terms of fish smoking, mercury used in catching fishing, chemical draining from big plantations along the coastal areas, solid and chemical waste from domestic and industrial usages. Further, FAO (2009) stated that all parties in artisanal fishing should consider integrated ecosystem and holistic approaches to small scale fisheries management, which will include cross-sectorial collaboration in order to adequately address disaster risks and climate change, including related issues, coastal erosion and the destruction of coastal habitats due to human induced pressure, and non-fisheries related factors. Such concerns seriously

undermine the livelihoods of fishing communities as well as their ability to the adapt to possible impact of climate change.

5.4.5 The Need for an Effective Monitoring, Control and Surveillance (MCS)

Rural community-based organizations agreed that the government should do all it can to ensure effective monitoring and enforcement mechanisms exist to deter the indiscipline and the non-respect of laws and regulations, regulating the artisanal fisheries in SWR and Cameroon as a whole. The state should put in place an effective MCS to prevent and eliminate all forms of illegal and/or destructive fishing practices having a negative effect on marine and inland ecosystems. The MCS should be focused on improving the registration of fishing activities and provide the government and other stakeholder authorities the information required for the management of the activity. The fisheries data collected should include bio-ecological, social, cultural and economic data relevant for decision-making on sustainability of the ecosystem, including fish stocks in a transparent manner (FAO, 2015)

The MCS should be such that it enables a better understanding and documentation of the true contribution of artisanal fisheries to sustainable resource management for food security, employment, and poverty eradication, thus contributing to the realization of UN SDGs 1, 2 and 8.

5.4.6. Provision of Social Infrastructure

Artisanal fisheries in SWR have virtually no sources of drinkable water, no electricity, no health infrastructures, no basic sanitation to ensure basic hygiene and no adequate housing as mentioned above. The rural community-based organizations would like to see the government promote investment in social infrastructures such as

- Infrastructure for basic sanitation that is safe and hygienic,
- Basic Health infrastructures,
- Safe drinking water for personal and domestic use,
- Education and literacy infrastructure such as elementary schools,
- Vehicle road infrastructure,
- Sources for energy i.e. electricity,

- Provide and enable access to school and education facilities that meet the needs of small-scale artisanal fishers and fishing communities as well as facilitating gainful and decent employment of the youth.

5.4.7 Regulation and Coordination of Migration

The major problem evident from the author's research is with the immigration of artisanal fishers and fish workers across national borders which needs to be handled amongst their respective governments. In SWR, as well as in Cameroon as a whole over 80% of artisanal fishers and fish workers are migrants, from especially Nigeria, Ghana, Benin, and Togo. The government should work with the local fisheries participants, communities and other artisanal fisheries actors, to create an appropriate framework to allow for fair and adequate integration of migrants who engage in sustainable use of fisheries resources and who do not undermine local communities, while respecting the host countries laws and regulations. It is vitally important for the respective governments to coordinate among themselves, and the local fishing workers that move across national borders. Necessary policies and management measures should be determine in consultation with artisanal fisheries community-based organizations and any other fisheries organizations and institutions (FAO 2015).

5.5 Conclusion

Well organized, well managed and well supported community-based organizations can be an effective approached to sustainable artisanal fishing. Along the coast of SWR of Cameroon, community-based organizations have successfully crated an aware to the problems of unsustainable exploitation of the fisheries resources. The small-scale, resource-poor, marginalized, subsistence artisanal fishers are now aware of the current trends that led to the present state of over-exploitation and full-exploitation of some resources of the sector, and changes need to be made in order to slow, stop and even reverse these trends. But these organizations are far from their full potential to act as a veritable, effective approach to sustainable artisanal fishing. In the SWR of Cameroon, these community base organizations need to be well organized, well managed and need a lot of support, especially in the area of capacity building, mostly from the state, NGOs and related/interested international donor organizations.

Hopefully, this study will be useful to the Government of Cameroon and its international organizations partners who are interested in sustainable artisanal fishing as a means to achieve sustainable poverty alleviation and rural development. Policy implications can be derived from the study, especially those that will facilitated a participatory bottom-up approach, in the sustainable management of the area's fisheries resources that could benefit the whole fishery sector in Cameroon and beyond. The study will also benefit Cameroon coastal area fishing community, especially the artisanal fishers and other operators of the fishing industry whose livelihood depend on the sector.

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APPENDICES

WORLD
MARITIME University
WMU Research Ethics Committee Protocol

Name of principal researcher:	*Mary Mindi Wabit Epse Ngawana*
Name(s) of any co-researcher(s):	N/A
Name of supervisor, if any•	NEIL BELLEFONTAINE
Title of project:	Community-Based Organizations as an Approach to Artisanal Fisheries
Is the research funded externally?	No
If so, by which agency?	N/A
Where will the research be carried out?	Coastal Area of South West Region - Cameroon
How will the participants be recruited?	Random Sampling from Fishermen and Focus Group
How many participants will take part?	120
Will they be paid?	NO
If so, please supply details:	N/A
How will the research data be collected (by interview, by questionnaires, etc.)?	Interview and Questionnaires
How will the research data be stored?	That will be held in strictest confidence and stored securely
How will the research data be disposed of?	All the data collected will be deleted after the research is finish
Is a risk assessment necessary? If so, please attach	NO

ature(s) f searcher(s):

Date: 23th May 2018.

Signature of Supervisor: 

Date: 23-4-18

QUESTIONAIRES

Questionnaires for Individual fishers, for A Study to be Submitted to WMU as a Dissertation in Partial Fulfillment of the Requirement of a Master's Degree in Ocean Sustainability Governance and Management (OSGM)

1. What is your actual fishing activity?
   (a) A fisherman who with the help of his fishing gear go out into the water and catches fish, not involve in processing (for instance smoking/drying the fish) and marketing
   (b) Collect the catch from fishermen, process it, (for instance smoke the fish) before marketing
   (c) A fisher man who catches the fish, process it (smoke) and market his catch.
2. Do you know the term Sustainable Artisanal Fishing (SAF)?
   (a) Yes
   (b) No
3. With a check mark indicate below the main constraints to SAF in your area of fishing. (If there are some constraint in your area of fishing not listed here bellow, add them in the space provided bellow this question
   a. Overfishing
   b. Habitat Modification (construction, mining, mangroves deforestation, and so on)
   c. Fishing with Chemicals
   d. Climate change
   e. Types of fishing gears (net size, and so on)
   f. Ocean pollution (littering, chemical pollution, and so on)
   g. Change in the Ecosystem balance (for example arrival of predatory fishes or other predators)
   h. Ghost fishing
   i. By-catch

   Other constraints present in your fishing area not mentioned here ----------

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4. What are some of the unsustainable fishing practices you have personally practiced?
   (a) In the past----------
   (b) Presently still Practicing (even if not as much as in the past) ----------
   ---
5. Are you a member of a Community/Rural Organization (C/RO) that is working with it member and the community as a whole to eliminate or mitigate the effects of these constraints to SAF?
   (a) Yes
   (b) No
6. If yes, with a check mark indicate which of the following types of C/RO are you a member of;
   i. Co-operative Society,
   ii. Common Initiative Group,
   iii. An Association,
   iv. Economic Interest Group, or
   v. An Informal Group like “Njangi” or village/community development ‘groups,
7. Where did you first learn about the term SAF?
   (a) From my Community/Rural Organization (C/RO)
   (b) Not from Community/Rural Organization (From somewhere else)
8. If not from your C/RO, did you know about SAF before or after joining your C/RO
   (a) Before joining my C/RO:
   (b) After joining my C/RO
9. List some of the actions taken by your C/RO to assist you/its members, practice SAF
   a. Good SAF practices introduce by your C/RO----------
   ---------- ---

b. (b). Actions introduce by your C/RO to eliminate or mitigate the above constrains to SAF mentioned above in number 3 ----------

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10 List in the space provided here bellow the strengths (advantages) of this form of C/RO in promoting SAF: ----------

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11 List in the space provided here below the weaknesses (disadvantages) of this form of C/RO in promoting SAF: ----------

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12 Any significant changes in your fishing activity's average daily/weekly output as a result of you becoming a member of your C/RO?

(a) YES

(b) NO

13 if yes, what is the change in your fishing activity's average daily/weekly output as a result of you becoming a member of your C/RO?

(a) Increase

(b) decreased

Interviews Questions– are for officials of Community/Rural Organizations (C/ROs) in the area of the study

1 What type of C/RO is your organization?
   a. Common Initiative Groups,
   b. Co-operative, Economic Interest Group,
   c. An Association,
   d. An informal group such as “Njangi” Group or Village Development Group)

2 When was your C/RO created…….

3 What are the main objectives of your C/RO? ……

4 How many members has the C/RO (total number of member, and the number of those that are real active members)? …….

5 Brief Structural organization of the C/RO (such as: the general assembly or meeting, president, supervisory committee, disciplinary committee, training committee, and so on) ……

6 Functional organization of the C/RO (such as number of Statutory Meetings say per year, e.g. Board Meetings, General Assembly Meeting, Training Meetings and so on)

7 Is the C/RO a member of a union, federation, and so on) ……..

8 Are there any structural and/or functional specificity of the C/RO that make it specifically suitable for the promotion of SAF practices by its members? List them ……

9 Sources and how the C/RO gets it materials for the promotion of SAF activities of its member and the community as a whole (e.g. from government, international organizations, research institutions, NGOS,

municipality and other sources……. ……

10 What are the main measures (actions) that have so far been taken by the C/RO to identify and address unsustainable AF practices and constrain to SAF in their area/communities? ……

a. List them (For instance identification of unsustainable AF practices and constrains to SAF in the area……..
b. Identifications of resources – e.g. training needs and resources, for the elimination or mitigation of the identified unsustainable AF practices/constrains to SAF. ……
c. The actual planning and execution of the measure/action (for instance training) and the supervision, monitoring and evaluation of the execution process and follow up) ……

11. What are the main perceivable results so far (qualitative and quantitative) of the above measures (actions) taken by the C/RO to promote SAF among its members and community? List them ……
12. List in the space provided here bellow the strengths (advantages) of this form of C/RO in promoting SAF: ----------
13. List in the space provided here below the weaknesses (disadvantages) of this form of C/RO in promoting SAF: ----------

Research Access Letter

Dear Sir/Ms

I wish to request for your assistance in a research activity that I am engaged in, which shall be submitted as dissertation, in partial fulfillment of the requirement of a Master's Degree in Ocean Sustainability Governance and Management at World Maritime University Malmo, Sweden.

The dissertation topic is: “Community-Based Organizations as an Effective Approach to Sustainable Artisanal Fisheries in the Coastal Area of the South West Region of Cameroon”

As part of data collection, I am carrying out a series of confidential and anonymous interviews with community organizations such as Co-operatives, common initiative groups and economic interest groups that are involved in fisheries activities along the coast of Cameroon. Since you are involved in fisheries activities in the area of the study and/or, is also a member of one of the above mentioned community organizations that are also specialized in fisheries, you are therefore a perfect fit for this interview that will provide me with needed information for my research. I will therefore be very grateful if you would give me a few minutes of your time in order to be a participant in this interview.

The data collection process is scheduled for the period of 7th to 18th May 2018. Any appointment time you could give me during this period would be greatly appreciated. Also any suggestions that will expedite the process of collecting the required data for this study will be graciously welcome.

It will greatly facilitate my work if we can also agree that the interview be recorded by a tape recorder, which I will latter use to listen to your wordings in order to correctly transcribed it. After which this will then be incorporated into a dissertation that will be presented, defended and published at the end of the study. Meanwhile, those things you have said may be quoted in the dissertation, you would not be identified at any stage.

Thank you in advance for your time, while awaiting to hear from you.

Sincerely

MARY MINDI WABIT ESPE NGAWANA

Ocean Sustainability Governance and Management (OSGM)

Malmö, Sweden

Community-Based Organization as an Effective Approach to SAF: CONSENT FORM

Confidentiality of Personal Information and use of Responses

Dear Participant(s),

Thank you for agreeing to participate in this interview/questionnaire.

Information provided will be used for a research that would form part of a Master's Degree dissertation, which will be made available to the public by publishing it online. Your personal information would not be part of what would be made public.

I understand that the interview may be done orally in a face-to-face meeting or by audio, video conference call on Skype or by writing down answers to questions sent to me. The oral interview will last approximately 30-40 minutes. Notes will be written during the interview. And audiovisual recording may also be made with my permission

I am also aware that the data will be used for a dissertation paper. I have the right to review, comment on, and/or withdraw information prior to the paper submission and presentation

All data gather in this study is confidential and anonymous with respect to my identity, unless I specified/indicated otherwise. I grant permission for the use of this information for the above mentioned dissertation. I also grant permission to use one of the following (with a bench mark place a tick on one) (1) My full Name (2) My first Name (3) Just a pseudonym

I understand that if desired, I will be given copied of the (place a tick on one)

(1) Paper (2) Audiotape (3) Transcribed interview (4) Photograph(s)

I am aware that this research study has been review and approved by the REC of the WMU, and that I may contact the research supervisor with any queries I may have.

I have read and understood the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

I have been given a copy of this consent form

Rest assured that information from any individual questionnaire/interview will remain confidential. Anonymous research data will be archived on a secure drive linked to the World Maritime University email address in order to make data available to other researchers in line with current data sharing practices.

Yours,

MARY MINDI WABIT ESPE NGAWANA

Ocean Sustainability Governance and Management (OSGM)

Consent by Participant

Yes, I want to be interview

No I don't want to be interview

I consent to my personal data, as outlined in the accompanying information sheet, being used for this study and other research. I understand that all personal data relating to volunteers is held and processed in the strictest confidence.

Name of Participant: Signature:

_____ _____

Date: Signature of Parent/Legal Guardian if applicable

_____ _____

City and Country of Consent _____

Copyright authorization

WORLD MARITIME UNIVERSITY

Author's Name: MARY MINDI WABIT NGAWANA

Course: RESEARCH 147

Degree: Master of Science: OCEAN SUSTAINABILITY GOVERNANCE AND MANGEMENT

Title of Dissertation: Community-Based Organizations as an Approach to Effective Sustainable Artisanal Fisheries "The Coastline of South West Region of Cameroon"

Authorization is hereby given to the World Maritime University to make this dissertation available to readers in the World Maritime University Library, or other library, either in its present form, in photomechanical, electronic, or other reproduction methods. The World Maritime University may also provide individual copies of this dissertation, if so requested, for private research or study. The University may charge for the reproduction costs.

Signature of author: 

Date: 17TH SEPTEMBER .2018

This completed form is to be submitted to Victoria Black